

AMERICAN JOURNAL OF PHARMACY

Volume 61, #2, February, 1889

Botanical Medicine Monographs and Sundry

ON SOME DRUG CONSTITUENTS

Abstracts from Thesis

Chamomile Flowers.—On exhausting the flower heads of *Anthemis nobilis* with petroleum benzin, Ella Amerman, Ph. G., obtained a green wax, which after six recrystallizations from alcohol was nearly white, bitter and crystalline, and melted at about 130°C. On exhausting the drug now with ether, and treating this extract again with ether, as recommended by Camboulises in 1871, a crystalline substance, distinctly acid, and of a glucosidal nature was obtained. A small quantity of similar crystals was also obtained by Werner's process (1867) by exhausting with dilute acetic acid, concentrating, precipitating with alcohol, treating with chloroform, evaporating, exhausting with ether and treating this extract with warm distilled water. In a third experiment the alcoholic tincture of the flowers was concentrated, precipitated by water, the filtrate treated with chloroform, the solvent evaporated and the residue treated with water. The aqueous solution of the crystals, on being boiled with hydrochloric acid, became opalescent, emitted a honey-like odor, and with Fehling's solution now gave evidence of the presence of glucose. There was no evidence of the presence of an alkaloid.

***Diospyros virginiana*, Lin.**—The bark of this tree is of a tan color, and has a mucilaginous bitterish, then sweetish and astringent taste. Experiments made by Frank E. Murphy, Ph. G., gave the following results: The powdered bark yielded to petroleum benzin 0.9 per cent. of an amber colored extract, free from volatile oil. Ether took up 1.4 per cent., the extract yielding to alcohol a wine colored mass, which deposited from chloroform in stellate or granular crystals. The alcohol extract of the bark amounted to 2.5 per cent. and was partly soluble in water. The water extract weighed 12 per cent. and contained mucilage and dextrin. The extracts thus far obtained yielded a purple color with alkalies, the reaction being due to yellow coloring matter. On treating the exhausted bark with weak solution of soda, the mixture also acquired a deep purple color, and ultimately became gelatinous. The acid infusion of the residuary bark gave with ammonia a purple colored precipitate; calcium oxalate was not found.

A quantity of the partially ripe fruit was dried and treated with ether; on evaporating the solvent a granular extract was left, which became purple by alkalies from the presence of yellow coloring matter.

***Eriodictyon californicum*, Bentham.**—An analysis of the leaves yielded to Oliver F. Lenhardt, Ph. G., 7.6 per cent. of moisture, and 4.25 per cent. (or for the anhydrous drug 5.14 per cent.) of ash. Of the latter 26.66 per cent. was soluble in water, 63.4 per

cent. soluble in HCl, and 3.5 per cent. soluble in solution of KHO. Petroleum benzin extracted, including volatile oil, 2.63 per cent., of which .39 was wax which separated from hot alcohol amorphous and melted at 61°C. With ether 15.3 per cent. of extract was obtained, of which three-fifths (9 per cent.) was a brittle, fragrant, and slightly acid resin soluble in 80 per cent. alcohol; a little tannin was also present, and the green tenacious residue was partly soluble in benzol, and entirely soluble in carbon disulphide, and in chloroform; alkaloids and glucosides were absent. The exhausted leaves yielded to absolute alcohol 3.64 per cent. of extract, fully one-third of which was soluble in water, among other constituents tannin and a glucosidal compound being dissolved. The watery extract of the exhausted leaves weighed 22.3 per cent., was of a brown color, had a pleasantly sweetish and somewhat acrid taste, and contained tannin.

Lycopus virginicus, Lin.—Sherman F. Hennessy, Ph. G., experimented with air dry bugle weed, containing 9 per cent. of moisture. Cold water dissolved 10.4 per cent. of constituents, consisting of albuminoids, gummy matter, a little tannin, and extractive. Alcohol now took up 12.8 per cent. of chlorophyll, resin, bitter extractive, etc. A small quantity of a lemon-yellow volatile oil was obtained by distilling the herb with water.

Stigmata Maydis.—John Rea, Ph. G., determined in the cold water infusion of corn silk (fresh?) the sugar by means of Fehling's solution, which indicated 0.88 per cent.; after boiling the infusion for one hour with hydrochloric acid, 1.42 per cent. of sugar was found.

ABSTRACTS FROM THE FRENCH JOURNALS.

Translated for the AMERICAN JOURNAL OF PHARMACY.

RATAFIA OF CACAO.—Dr. L. Jeannel having made this preparation in accordance with Guibourt's formula, as given in l'Officine, obtained unsatisfactory results. After trying several combinations he has arrived at, the following, which he recommends: Cacao (bruised and torrefied), 750 gm.; sliced vanilla 2 gm.; alcohol of 56 per cent. 4000. Macerate for 15 days; strain; add to the residuum, boiling distilled water, 1,100. Leave to cool; add to the infusion, crushed sugar, 1300. Dissolve, mix with the alcoholic liquor, and filter.—*Bull. Com.*, Dec. 1888.

ARRACK OR YARAQUE.—In a communication to the Académie des Sciences, M. V. Marcano states that the natives of upper Orinoco make arrack from the root of *Manihot utilissima* or cassava. It is dampened, covered with banana leaves and allowed to stand for several days. The substance is then bruised and placed in a cylinder woven with banana leaves and having an opening at the bottom. From this aperture a thick, syrupy liquid runs slowly and is collected. The day before arrack is wanted, a bitter aromatic infusion is introduced at the top of the cylinder. The resultant liquor ferments very energetically and gives an intoxicating drink. Among some of the tribes the mass contained in the cylinder is simply thrown into water, where fermentation proceeds and gives a cloudy alcoholic liquor.—*J. de Phar. et de Chim.*, Jan. 1, -1889.

CORONILLA SCORPIOIDES.—Schlagdenhauffen and Reeb have separated from the leaves the bitter principle, *coronillin*, to which they assign the formula $C_{11}H_{12}O_5$. It is a yellowish powder, soluble in water, acetone and amylic alcohol; slightly soluble in chloroform and ether. Heated with diluted hydrochloric acid an amorphous resin is separated, to which the authors give the name of coronillein. This also occurs as a yellow powder but is not bitter to the taste. It is insoluble in water, but dissolves in alcohol, acetone and chloroform. Coronillin, say the authors, is a heart poison; coronillein has no perceptible physiological action.—*Nouv. Rem.*, Dec. 24, 1888.

TOXIC EFFECTS OF COCAINE.—Dr. Moizard reports that a child *aet.* four years took by accident 25 cgm. of cocaine. There was no immediate effect; the child went quietly to sleep. One hour afterward he awoke in frightful agony. The face was pale, respiration difficult, nausea, pains in the upper portion of the chest, formications, cramps of the limbs, and great muscular agitation. The child could get no rest, and was a prey to terrifying hallucinations. An enema with 50 cgm. of chloral, followed two hours later by one of 30 cgm., was given. The child began to get quiet. During the night it slept, but was frequently awakened by convulsive movements. On the following day it was perfectly well.—*Jour. de Méd.*, Dec., 1888.

THE ANATOMICAL STRUCTURE OF GRINDELIA ROBUSTA.¹

By JOSEPH BEAUVAIS, MOSCOW.

Grindeliarobusta belongs to the order of Compositae, suborder Tubuliflorae, and is an herb with oblong, thickish, light green and toothed leaves. Both sides of the leaves have the epidermis covered with a thick cuticular layer and contain glands and stomata. The glands consist of a one-celled base bearing the gland-cell which is filled with resin. Beneath the epidermis of both the upper and lower surface is found a layer of parallel palisade cells containing chlorophyll; the central part of the mesophyll consists of spongy parenchyma, in which the vascular bundles are imbedded. These bundles are closed, collateral, and are surrounded by a sheath of thick-walled collenchyma, gradually passing into the hypoderma of the upper and lower surface of the leaf. Rather large resin ducts are put within this collenchyma layer.

The involucre of the flower head consists of spirally arranged scales. A transverse section through the top portion of these scales is nearly circular, and is covered with an epidermis, bearing glands and stomata upon the outer surface, and covering several tiers of palisade cells, both on the outer and inner surface. A vascular bundle in the centre of the scale is surrounded by a layer of collenchyma containing resin ducts.

The transverse section through the middle of the involucre scale is elongated in shape and is divided into an upper and a lower part by a rather broad zone of sclerenchyma. In the upper part beneath the epidermis is a palisade layer extending to the edges; but the lower part has no palisade cells, but contains elongated, thick-walled cells, forming large intercellular spaces. Near the base of the involucre scale

¹ Translated from *Berichte der Deutschen Botanischen Gesellschaft*, 1888, p. 403.—J. M. M.

the edges are free from palisade cells, but contain collenchyma.

The florets are small, and collected into many-flowered heads those of the outer row are unisexual and ligulate, while the disc florets are tubular. The latter are on both sides covered with a cuticized epidermis, and contain a slightly developed mesophyll with compressed cells, which, however, are wanting in some parts of the corolla. The ligulate florets have a well-developed mesophyll consisting of thin-walled cells, and containing yellow oil in the intercellular spaces. Papillae are formed on both sides of the epidermis.

Anthers, gynaecium and the seed show no striking characteristics. The receptacle has rather long appendages (Zotten) which differ from those of most compositae in not containing vascular bundles.

ARROW-POISON OF THE SOMALIS.²

By ARNAUD.

The Somalis on the east coast of Africa prepare an arrow-poison from the aqueous extract of the wood, and especially of the root of Ouabaïo, a tree which is closely related to although not identical with *Carissa Schimperi*, a native of Abyssinia.

A concentrated extract of the wood in warm water was prepared and precipitated with lead acetate, the filtrate treated with hydrogen sulphide, and the second filtrate boiled and afterwards concentrated in a vacuum. The concentrated solution was mixed with six times its volume of alcohol of 85°, boiled, allowed to cool in shallow vessels, and the crystals thus obtained purified by recrystallization. first from alcohol of 85° and afterwards from water.

The ouabain thus obtained contains no nitrogen and has the composition $C_{30}H_{46}O_{12}$. It forms thin, white, nacreous lamellae with no taste, no smell, and a neutral reaction. It is almost insoluble in cold water, but is readily soluble in boiling water, with a great tendency to form supersaturated solutions, and also dissolves readily in moderately concentrated alcohol, but is almost insoluble in absolute alcohol and insoluble in ether or chloroform. At 180°, it becomes pasty with slight decomposition, and at 200° it is completely melted. A warm aqueous solution has a rotatory power $[\alpha]_D = -34^\circ$. A concentrated aqueous solution gives a precipitate with tannin. When boiled with dilute acids, it yields a reducing sugar, and hence it would seem that ouabain is a glucoside.

When ouabain crystallizes from an aqueous solution, it contains 7 mols. H_2O which is not completely expelled below 130°.

When boiled with barium hydroxide, ouabain yields a barium-derivative which when dried at 100° has the composition $Ba(C_{30}H_{47}O_{13})_2$.

Ouabain has no toxic effect when introduced into the stomach, but when introduced by subcutaneous or intravenous injection, it acts on the heart and produces death. 2 milligrams will kill a dog of 12 kilos. in a few minutes.

² Compt. rend., cvi., 1011-1014, reprinted from *Toun Chem. Soc.*, 1888, p. 848.